

NOAA
FISHERIES
SWFSC

4.0 Partnerships, leveraging our resources

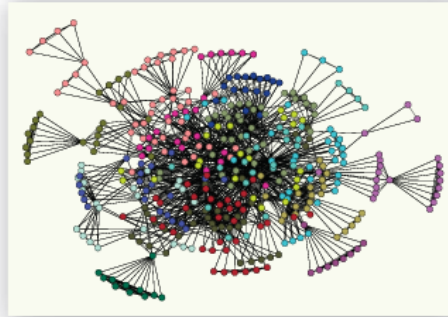
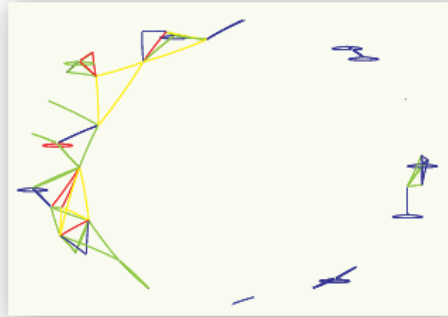
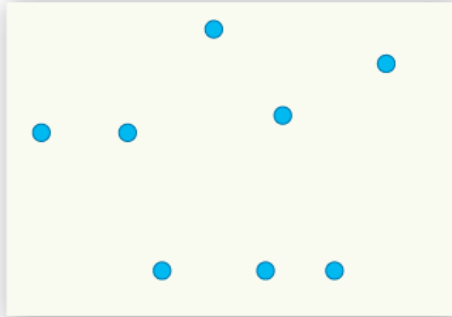
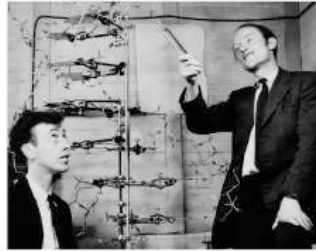
Kristen C. Koch

SWFSC Ecosystem Review, April 20, 2016

“Centers should provide reviewers material that:
Describes the partnerships used by the Center in
its ecosystem science enterprise and where there
is significant leveraging of outside resources.”

PERSPECTIVES

Barabási, 2005



Evolution of the scientific enterprise. (Left) For centuries, creative individuals were embedded in an invisible college, that is, a community of scholars whose exchange of ideas represented the basis for scientific advances. Although intellectuals built on each other's work and communicated with each other, they published alone. Most great ideas were attributed to a few influential thinkers: Galileo, Newton, Darwin, and Einstein. Thus, the traditional scientific enterprise is best described by many isolated nodes (blue circles). (Middle) In the 20th century, science became an increasingly collaborative enterprise, resulting in such iconic pairs as the physicist Crick and the biologist Watson (left),

who were responsible for unraveling DNA's structure. The joint publications documenting these collaborations shed light on the invisible college, replacing the hidden links with published coauthorships. (Right) Although it is unlikely that large collaborations—such as the D0 team in particle physics or the International Human Genome Sequencing Consortium pictured here—will come to dominate science, most fields need such collaborations. Indeed, the size of collaborative teams is increasing, turning the scientific enterprise into a densely interconnected network whose evolution is driven by simple universal laws.



SWFSC has extensive **ecosystem-related** partnerships across all categories

- NOAA and NMFS offices
- Other federal agencies
- State and local agencies
- Academic
- NGOs
- International collaborations
- Fishing community



NOAA

NMFS: WCRO, NWFSC, AFSC, PIFSC, SEFSC, NEFSC

NOS: IOOS, NERR, five west coast Sanctuaries

OAR: ESRL, PMEL, GFDL, RISAs, Sea Grant

NESDIS: CoastWatch

Pacific Fishery Management Council



Academic

CIMEC (7 universities)

CIMRS

JISAO

plus at least 15 other universities

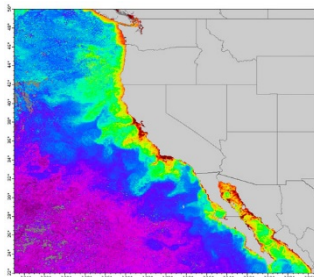
State

CA Dept Fish & Wildlife

CA Dept Water Resources

SWFSC

Partnerships are critical



Federal

Interior Dept, NSF, Navy,

NASA, State Dept



International

Antarctic orgs:

CCAMLR

Pacific orgs:

PICES

IATTC

ISC

Key Countries:

Canada, Mexico,

Australia, Japan,

Peru, Chile

NGOs

Center for Ocean Solutions

Point Blue, Farallon Inst.,

The Nature Conservancy

MBARI, Pew, Oceana,

Aquarium of the Pacific,

Monterey Aquarium.....



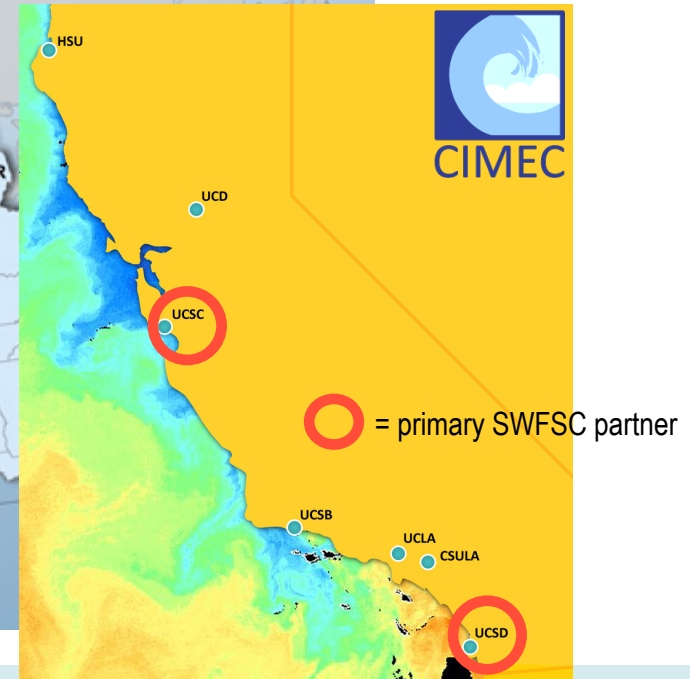
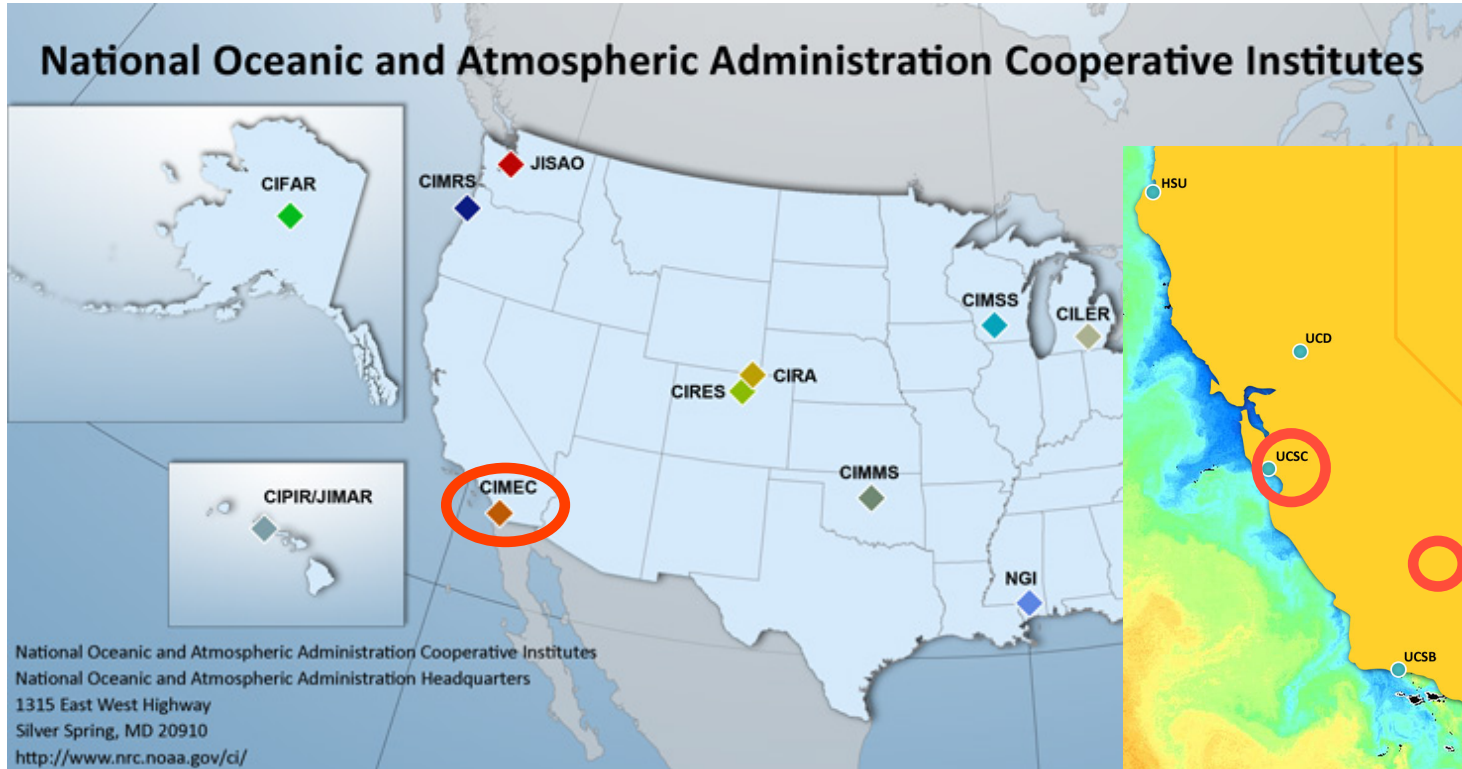
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Example:
**Cooperative
Institutes**

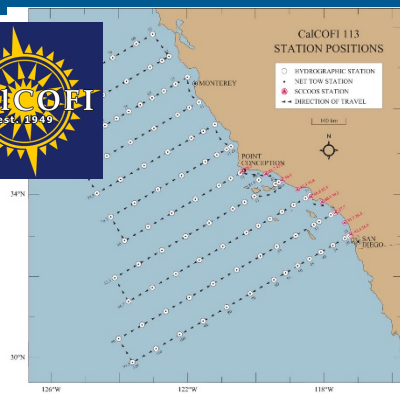
Example: NOAA's Cooperative Institutes

Cooperative Institute for Marine Ecosystems & Climate (CIMEC)



One CIMEC — Two Models

- UCSD - Scripps Institute of Oceanography (CI Directorate) (~\$2M from SWFSC)
 - **Model 1**
 - No co-location (no CIMEC embedded employees)
 - One primary collaboration: CalCOFI (co-directors at each site; surveys ½ lead by SIO & ½ lead by SWFSC; collaboration on data analysis and management)
 - Many other SWFSC/SIO partnerships, but most occur outside CIMEC
- UCSC – IMC @ Long Marine Laboratory (~\$5M from SWFSC)
 - **Model 2**
 - Co-location (70 CIMEC employees embedded at SWFSC)
 - Complete integration of CI staff across SWFSC ecosystem programs



The two models drive how we partner!

Other Academic Partnerships

Stanford students

- Marine Conservation (Crowder)
- Top predator ecology (Goldbogen, Block)
- Fisheries ecology (Micheli)

Other....

- CIMR (OSU)
- JISAO (UW)

GRIP – graduate research internship program

- UC Berkeley
- Stanford University
- U Alaska Fairbanks

Hollings Scholars

- Wellesley
- U Miami
- College of Charleston

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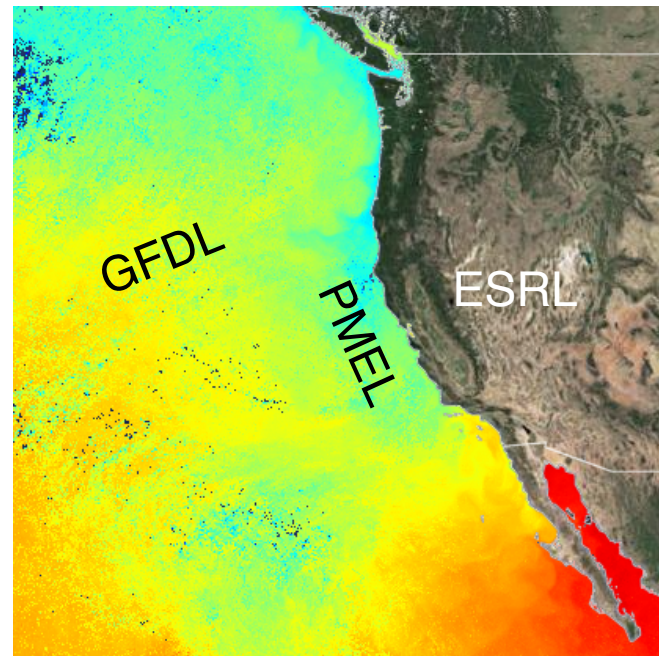
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Example:
OAR Laboratories

Example: OAR Laboratories

Ecosystems: From Snow Caps to White Caps!

- GFDL provides us boundary conditions (BCs) for the offshore ocean conditions
- ESRL provides us BCs for the terrestrial water/river levels
- PMEL the in-water acidification/biogeochemical state

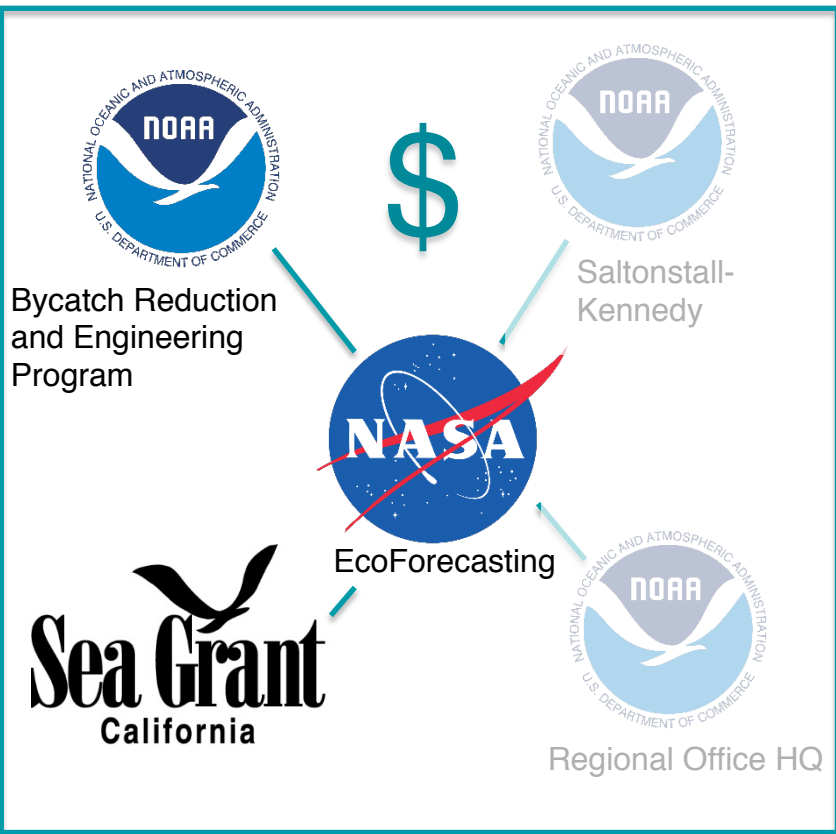


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Example:
**Dynamic Ocean
Management**

Example: Dynamic Ocean Management



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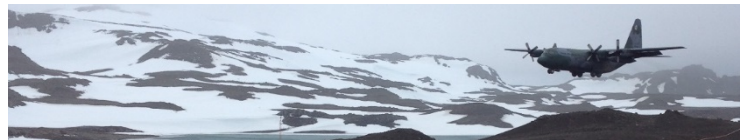
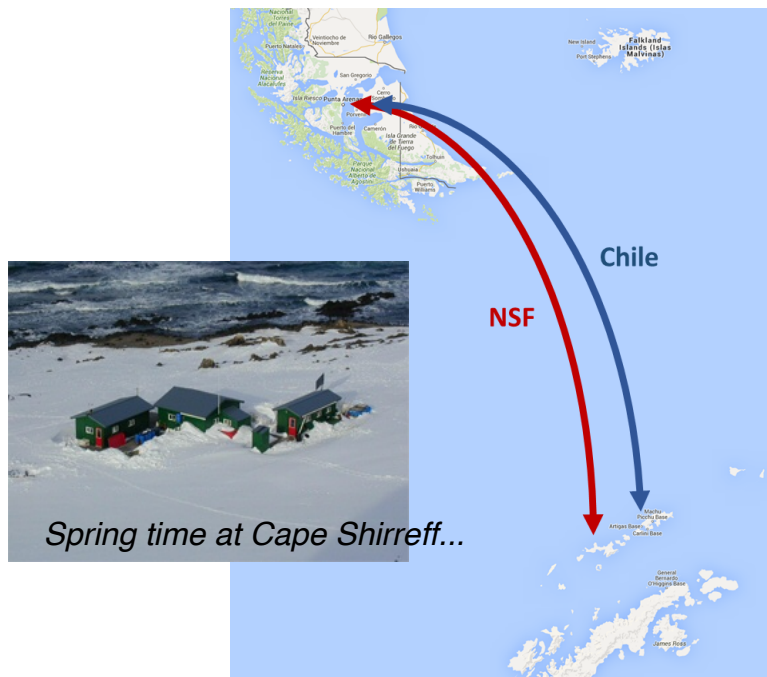
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Example:

**NSF and other
countries in the
Antarctic**

Example: NSF and international partnerships in the Antarctic

International hitchhikers!



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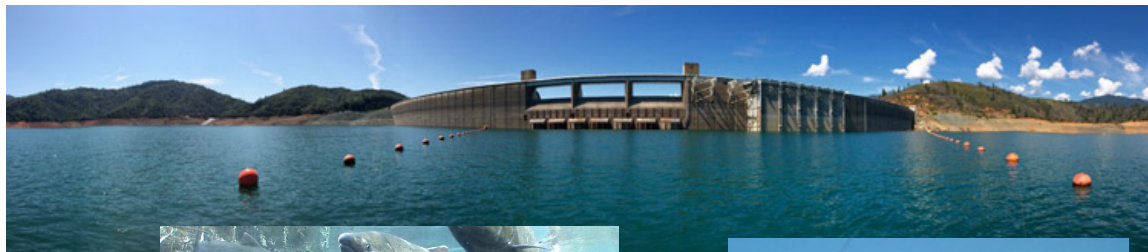
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Example:
**US Bureau of
Reclamation**

Example: U.S. Bureau of Reclamation Supporting Salmon

3-6 Inter-Agency Agreements, \$2-\$4M/year total

- Decision support (Mantua presentation)
 - Coupled models (project operations to populations)
 - Observing systems
 - Drought effects
- Molecular genetics
 - Reintroductions
 - Hatchery management



Strengths!

- SWFSC's reputation attracts partners across multiple spheres
- CIs give access to ecosystem scientists; SWFSC helps train next generation
- Diversity of partnerships and vehicles to partner makes science programs stronger and \$\$'s go further

Challenges

- Deciding what we need to do; what do we keep vs farming out
- CIMEC growth in Santa Cruz requires attention to ensure organizational structure remains sound
- CIMEC partnership in La Jolla strong, but could be stronger
- Federal and state partnerships carry large overhead/paperwork burden for short-term funding
- NOAA travel ceilings/lack of funds stunts our scientists' ability to partner as we might like
- Data management and access – cultural and technical barriers

Strategies

- More deliberate internal planning to determine SWFSC role vs others' roles
- Working with CIMEC partners to develop more structure within the CI and more engagement from university leadership and faculty
- Working with other federal agencies to institutionalize our partnerships for the long-term (Bur of Rec, NSF, etc) and within NOAA to streamline
- Work undertaken and planned to manage internal and grantee data streams to meet mandates